Compression of the Tail Plasmasheet by Interplanetary Shocks

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Observations from WIND, IMP-8 and GEOTAIL spacecraft are used to study the plasmasheet/magnetotail lobes when interplanetary shocks compress the Earth's magnetotail. Typically we find that the tail lobe magnetic fields increase monotonically to a steady state value within ~ 10 min. The compression effects as a function of location in the tail will be discussed and modeled. At times, tail low frequency plasma waves result from the shocks. The mode of the waves have been analyzed and will be discussed in terms of possible plasma instability generation. The role that the wave modes play in current sheet disruption or reconnection will be discussed.